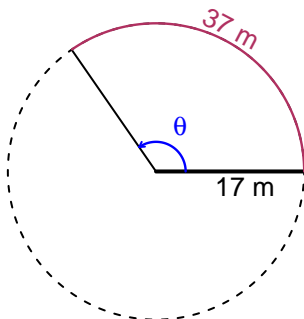# Trig Final (Practice v10)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 37 meters. The radius is 17 meters. What is the angle measure in radians?
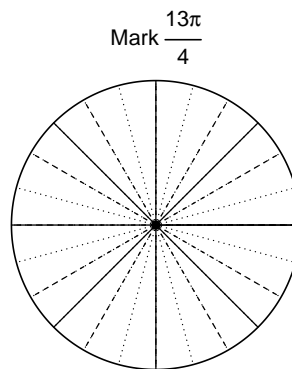

Question 2

Consider angles $\frac{-19\pi}{6}$ and $\frac{13\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{-19\pi}{6}\right)$ and $\sin\left(\frac{13\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\frac{-19\pi}{6}$

Find $\cos(-19\pi/6)$

Mark $\frac{13\pi}{4}$
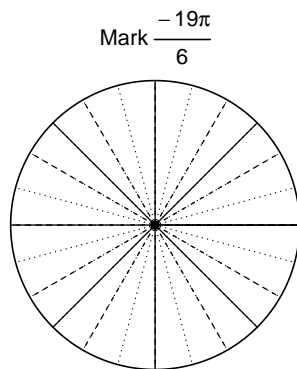
Find $\sin(13\pi/4)$

Question 3

If $\sin(\theta) = \frac{-60}{61}$, and θ is in quadrant IV, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 7.4 meters, a frequency of 4.49 Hz, and a midline at $y = -5.75$ meters. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).